

## Typification of Dr. Makino's Botanical Names (1)

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Dr. Tomitaro Makino gave numerous names to Japanese plants. As a result of my investigation of his authentic specimens from nomenclatural aspects lectotypifications and verifications of other type materials of some aquatic plant families of Alismatidae, Alismataceae, Hydrocharitaceae, Potamogetonaceae, Zannichelliaceae and Zosteraceae, are here presented.

**Key words:** Alismatidae, aquatic plant, Tomitaro Makino, type.

Dr. Tomitaro Makino (1862–1957), often referred to as the “father” of Japanese plant taxonomy, described numerous taxa including new combinations during his lifetime. In most cases, however, in his papers, Makino did not designate holo- and other types of his choice. Since then hardly any attempt has been made to verify such types of Makino. It is very difficult to find the original citation for each name as many were first published invalidly (i.e., as *nomina nuda*, accompanied only by a Japanese name and/or its locality), before being revised at a later date (Tanaka 2004).

The author's previous paper (Tanaka 2004) provided an enumeration of the scientific names published by Makino to help verify the status of potential type materials. This paper is intended as the first of a series of reports proposing the lectotypifications and verifying other types of such aquatic families as Alismataceae, Hydrocharitaceae, Potamogetonaceae, Zannichelliaceae and Zosteraceae. To clear up this situation the author has been investigating Makino's specimens that are deposited in the herbaria of MAK, TI and TNS.

### ALISMATACEAE

*Sagittaria aginashi* Makino in Bot. Mag. Tokyo **15**: 104 (1901).

*S. sagittaeifolia* L. var. *aginashi* Makino in Bot. Mag. Tokyo **6**: 49 (1892), nomen nudum.

**Type:** Prov. Iwaki, T. Makino s. n. as MAK 77766 (lectotype here designated, MAK, isolectotype in MAK); Prov. Musashi, Himonya s. n. as MAK 77768 (MAK, isosyntype in TI); Prov. Mikawa, Aug. 1899, T. Makino s.n. as MAK 77777 (MAK, isosyntype in TI); Prov. Oshima in Hokkaido, Aug. 10, 1878, R. Yatabe & K. Miyabe s. n. (TI); Prov. Suo, Ochi-mura, Aug. 26, 1892, Nikai no. 625 (TI); Prov. Mikawa, Takashi-mura, Oct. 29, 1894, T. Makino s. n. (TI).

Japanese name: Aginashi (Makino 1901).

Makino primarily recognized this species as a new variety of *S. sagittaeifolia*, *S. sagittaeifolia* var. *aginashi* in Bot. Mag. Tokyo **6**: 49 (1892), however nom. nud. with the only remark that its locality was “Iwaki”, which made it clear that *Sagittaria sagittaeifolia* L. var. *aginashi* Makino was originally collected from Iwaki Province.

Afterwards he described it as a species, *S. aginashi* in Bot. Mag. Tokyo **15**: 104 (1901). I, therefore, select the specimen collected from Iwaki as the lectotype. Nikai collections are generally housed in both herbaria of TI and TNS, however, I have not found the specimen of Nikai (no. 625) in TNS.

**Sagittaria sagittifolia** L. var. **alismaefolia** Makino in Bot. Mag. Tokyo **23**: 23 (1909).

**Type:** Prov. Satsuma, Mt. Kinpo-zan, Yubuse-mura in Heki-gori, Nov. 22, 1908, T. Fukasawa 39 as MAK 176104 (holotype in MAK).

Japanese name: Hitotsuba-omodaka (Makino 1909).

Makino cited only one specimen and it was found in MAK, hence this is automatically becomes a holotype. Makino transferred this variety to *S. trifolia* L. at a later date. This taxon is currently accepted as *S. trifolia* L. var. *alismaefolia* (Makino) Makino.

**Sagittaria trifolia** L. var. *trifoliata*, ut [α] *typica* Makino in J. Jpn. Bot. **1**: 36 (1918).

**forma suitensis** Makino in J. Jpn. Bot. **1**: 36 (1918).

Japanese name: Suta-guwai.

Makino mentioned this landrace is cultivated in Suta-mura, Osaka, in his original publication. Only one specimen consisting of six sheets collected by Makino has been found in MAK (MAK 78709). The specimen was collected from Ibaraki, Osaka and identified by M. Mizushima. Thus far no type materials related to this forma have been found except the above specimen, however, this is a sterile specimen. For typification of this forma, further studies are required.

**forma heterophylla** Makino in J. Jpn. Bot. **1**: 37 (1918).

**Type:** Musashi Shimura, Nov. 1909, T. Makino s. n. as MAK 78700 (MAK, lectotype here designated).

Japanese name: Azuma-omodaka (Makino 1918).

This specimen could be related to the type material of *f. heterophylla*, because it is the only one specimen collected from a type locality by Makino, Musashi Shimura and matches the original description.

Makino also described forma *subhastata* under *S. trifolia* L. var. *trifolia* and forma [a] *albida*, forma [b] *caerulea* under var. [β] *sinensis* (Sims) Makino, however, he did not designate holotypes of these taxa, and type materials of these taxa were not found. Further study is required for typifications including neotypification of these names.

## HYDROCHARITACEAE

**Halophila eupblebia** Makino in Bot. Mag. Tokyo **26**: 208 (1912).

**Type:** Prov. Awa: Shishikui in Kaifu-gori, Aug. 22, 1906, D. Nikai s. n. (holotype in TI); Isl. Pratas, June 1908, T. Kawakami s. n. (paratype in TI).

Japanese name: O-umihirumo, Umi-koban (Makino 1912).

Makino originally cited these specimens as follows: Hab. Prov. Awa in Shikoku: Shishikui in Kaifu-gori (D. Nikai! herb. Sc. Coll. Imp. Univ. Tokyo, Aug. 22, 1906). (Distrib.) Isl. Pratas (T. Kawakami! June 1908).

In most cases Makino cited the localities of all related specimens continuously in his description, from which syntypes can be recognized rather easily. He hardly used "Distrib." in specimen citation of his original description. However, in this case he simply cited Kawakami's specimen as distribution data in a different paragraph. Additionally he also indicated the herbarium where the Shishikui specimen was kept, but didn't mention as to which herbarium kept Kawakami's specimen. Hence I determine the Shishikui specimen to be the holotype and Kawakami's collection as paratype. This taxa is now widely accepted as *H. ovalis* (R.

Br.) Hook. f.

**Vallisneria spiralis** L. var. **denseserrulata** Makino in Bot. Mag. Tokyo **28**: 27 (1914).

*V. denseserrulata* (Makino) Makino in J. Jpn. Bot. **2**: 19 (1921).

**Type:** Prov. Shimoosa, Sakura, Sept. 10, 1895, T. Makino s. n. as MAK 196740 (holotype, isotype in MAK).

Japanese name: Kogai-mo.

Currently accepted name: *V. denseserrulata* (Makino) Makino.

Makino cited only one specimen and I found it in MAK, hence this is automatically becomes a holotype. Makino also described var. *subulispatha* under *Vallisneria spiralis* in J. Jpn. Bot. **7**: 6 (1931), however, any type materials were not found. Further studies are required for the typification of this taxon.

#### POTAMOGETONACEAE

**Potamogeton lucens** L. var. **teganumensis** Makino in Bot. Mag. Tokyo **19**: 142 (1905).

*P. teganumensis* (Makino) Makino in Bot. Mag. Tokyo **26**: 122 (1912).

**Type:** Prov. Shimoosa, Lake Teganauma, Aug. 1905, H. Nakano s. n. as MAK 226818 (lectotype here designated, MAK).

Japanese name: Gashamoku, Chakkaramoku (Makino 1905).

In the original publication two more specimens collected by K. Yamadzuta were cited. However, these sheets were not found. This taxon is currently accepted as *P. dentatus* Hagstr.

**Potamogeton miduhikimo** Makino, Illust. Fl. Jap. **1** (9): 95, pl. 54 (1891).

**Type:** Prov. Tosa, Kubokawa, Hiragushi, Aug. 1889, T. Makino s. n. as MAK 64099 (lectotype here designated, MAK, isolectotype in MAK); Prov. Musashi, Iyoda Vill., Numanaka, July 7, 1890, T. Makino s. n. as MAK 64098 (syntype in MAK).

Japanese name: Mizuhiki-mo.

In his publication Makino cited Hiragushi village and Iyoda specimens, which are syntypes. Hara (1944) relegated this species to a variety of *P. octandrus* Poir., and it is currently treated as *P. octandrus* Poir. var. *miduhikimo* (Makino) H. Hara.

**Potamogeton nipponicus** Makino, Illust. Fl. Jap. **1** (9): 95, pl. 56 (1891).

**Type:** Prov. Sagami, Hakone, Ashinoko Lake, Sept. 1886, T. Makino s. n. as MAK 62855 (holotype in MAK).

Japanese name: Sasa-ebi-mo (Makino 1891).

#### ZANNICHELLIACEAE

**Cymodocea asiatica** Makino in Bot. Mag. Tokyo **26**: 211 (1912).

**Type:** Liukiu, Naha in Island Okinawa, Apr. 1911, Saburo Kanagusuku s. n. as MAK 237070 (holotype in MAK).

Japanese name: Rhykyu-amamo.

As Makino (1912) cited in his original description only one specimen was collected by S. Kanagusuku, hence the above mentioned specimen which automatically becomes a holotype. Miki (1932) reduced this taxa under synonymy and has currently been accepted as *C. serrulata* (R. Br.) Aschers & Magnus.

**Zannichellia palustris** L. subsp. **pedicellata** (Buch.-Ham.) Hook. f. var. **japonica** Makino in Bot. Mag. Tokyo **24**: 55 (1910).

**Type:** Prov. Chikuzen, 1909, Sakutaro Azuma s. n. as MAK 226871 (holotype in MAK).

This sheet has Makino's label, in his handwriting, as "No. 20 Herb. T. Makino, *Zannichellia pedicellata* Buch-Ham., Mikazuki-mo (n. n.)." As this is the only cited specimen found in MAK and I did not find any material in TI, this sheet automatically becomes the holotype.

## ZOSTERACEAE

**Phyllospadix japonica** Makino in Bot. Mag. Tokyo **11**: 137 (1897).

**Type:** Prov. Yasubo, Amatsu, April 1896, T. Makino s. n. (holotype in TI, isotypes in MAK); Enoshima, T. Makino s. n. (paratype in TI).

Japanese name: Ebi-amamo (Makino 1897).

I found only one sheet in TI annotated as “*P. japonicus* Makino! Ebi-amamo, new Japanese name—T. M.” in Makino’s handwriting and the duplicate sheets are also kept in MAK. For this reason and also according to 9A.4 of the International Code of Botanical Nomenclature (Greuter et al. 2000), this sheet is hereby chosen as the holotype of *P. japonicus* Makino, and the other sheets in MAK should be regarded as isotypes. He mentioned that a specimen of the same species collected in Enoshima (Kanagawa Pref.) was placed at Univ. Tokyo herbarium and now it is actually kept in TI. This ought to be a paratype. In the MAK there are five sheets in total (MAK 196333 and MAK 226888) of this species separated into two covers, but all of them represent the same taxon.

**Phyllospadix iwatensis** Makino in J. Jpn. Bot. **7**: 15 (1931).

**Type:** Rikachu (Iwate Prefecture): Sept. 1929, T. Makino s. n. as MAK 226878 (holotype in MAK).

Japanese name.: Hai-sugamo (Makino 1931).

Makino (1931) cited only one specimen collected from Miyako Peninsula in his original description, which can be automati-

cally regarded as the holotype. Although he cited the locality as Rikuchu, Miyako Peninsula and the label of this sheet said only “Rikuchu”, according to his personal diary housed in the library of the Makino Botanical Garden, he collected specimens in Miyako. Anatomical examination of this specimen, suggests that there is a possibility that two taxa are mounted on the same sheet of MAK 226878, and the right-hand specimen has characters of *P. iwatensis* (Kuo unpublished). In this case the lectotypification for *P. iwatensis* will be required for the right-hand specimen in future studies.

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田中伸幸：牧野富太郎博士発表学名のタイプ検討（1）

牧野富太郎博士は日本の植物分類学の基礎を築いた一人とされ、多くの日本産植物の学名を発表

した。しかし、発表学名に対するタイプ標本の把握、検討、特に潜在するタイプ関連標本の調査、

レクトタイプの選定などはあまり行われていない。この一連の研究では、牧野博士が発表した学名のタイプ標本を分類群ごとに整理し、再検討しようとするもので、本稿では水生植物のオモダカ科、

トチカガミ科、ヒルムシロ科、イトクズモ科、アマモ科について主として MAK, TI に潜在する多数のタイプ関連標本を発掘し、整理・検討を行った。  
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